

Remote UV Fluorescence Lifetime Spectrometer, Phase II

Completed Technology Project (2011 - 2013)



Project Introduction

The goal of this project is to develop, demonstrate, and deliver to NASA an innovative, portable, and power efficient Remote UV Fluorescence Lifetime Spectrometer (RUVPhase

TM

) for the in-situ robotic or manned crew planetary scientific exploration and investigation of surface and subsurface geophysical terrain. The RUVPhase

TM

system is based on the integration of ROI's leading technologies: 1) frequency domain fluorescence lifetime-resolved imaging spectroscopy using time gated "phase-locked" detection, 2) steady-state fluorescence miniature spectrometer, and 3) remote fiber optic laser induced UV fluorescence detection. The RUVPhase

TM

technology addresses the problem of developing a compact, energy efficient, fast detection, and highly sensitive UV Fluorescence Lifetime Spectrometer to remotely detect and measure fluorescence signals from geophysical lunar materials such as minerals and organic species that exhibit characteristic fluorescence signatures in the UV-Visible spectrum with relatively low fluorescence quantum efficiencies. The innovativeness of the miniature RUVPhase

TM

system will support a large variety of NASA terrestrial and space scientific discovery applications for chemical and biological materials identification and characterization as well as in the commercial market for medical and biological applications, chemicals and pharmaceuticals, environmental science, and defense and homeland security applications.



Remote UV Fluorescence
Lifetime Spectrometer, Phase II

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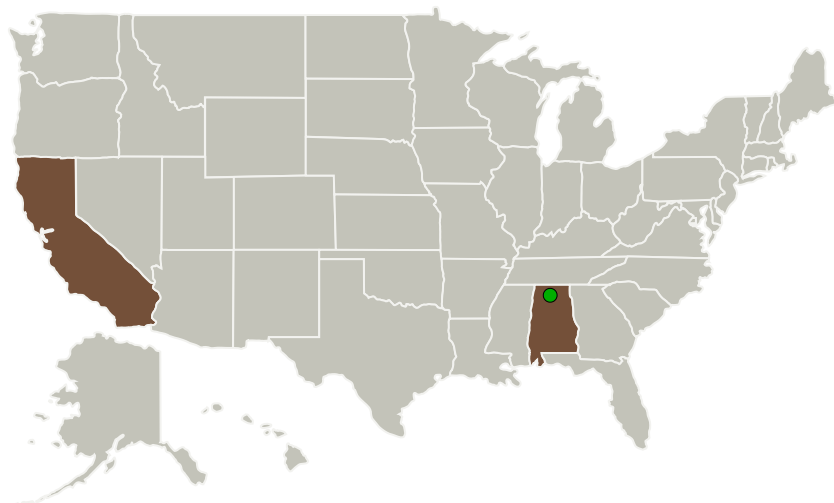
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Primary U.S. Work Locations and Key Partners



| Organizations Performing Work | Role | Type | Location |
|---------------------------------------|-------------------------|---|---------------------------|
| Redondo Optics, Inc. | Lead Organization | Industry Small Disadvantaged Business (SDB) | Redondo Beach, California |
| ● Marshall Space Flight Center (MSFC) | Supporting Organization | NASA Center | Huntsville, Alabama |

Primary U.S. Work Locations

| | |
|---------|------------|
| Alabama | California |
|---------|------------|

Project Transitions

**June 2011:** Project Start**November 2013:** Closed out**Closeout Documentation:**

- Final Summary Chart(<https://techport.nasa.gov/file/139281>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Redondo Optics, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Edgar A Mendoza

Co-Investigator:

Edgar Mendoza

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Technology Maturity (TRL)

Start: **4**
Current: **6**
Estimated End: **6**



Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.1 Remote Sensing Instruments/Sensors
 - └ TX08.1.3 Optical Components

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System